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A Score Card for Judging the Success
or Failure of Home Projects
in Agriculture

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A SCORE CARD FOR JUDGING THE SUCCESS OR
FAILURE OF HOME PROJECTS
IN AGRICULTURE

BY

CARL COLVIN
B. S. University of Illinois, 1912

THESIS

Submitted in Partial Fulfillment of the Requirements for the

Degree of

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IN EDUCATION

IN

THE GRADUATE SCHOOL

OF THE

UNIVERSITY OF ILLINOIS

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UNIVERSITY OF ILLINOIS

THE GRADUATE SCHOOL

June 3, 1920

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY
SUPERVISION BY Carl Colvin

ENTITLED A Score Card for Judging the Success or Failure
of Home Projects in Agriculture

BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR
THE DEGREE OF Master of Science in Education

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CHAPTER I

INTRODUCTION

Tendency to measure objectively. Modern tendencies in the field of Education point toward the establishment of some means of measuring in a more objective way the results obtained in the class room by the use of such instruments as tests and scales. A variety of devices are being set up to be used as instruments in measuring the achievements of pupils in the various fields of educational activity, of teachers at work in the class room, of the objective results of the efforts of both pupils and teachers and of certain other factors concerned in education which lend themselves to objective measurements. The score card as an instrument of measurement has received some attention from teachers.

Definition of a score card. A score card, as the term is used in this discussion, is a device showing the various factors contributing to the composition of the thing to be measured, each factor being weighted to indicate its relative importance. As stated by Gray (1) "the score card consists of two essential parts: first, a list of the elements of the thing to be measured; and second, an evaluation of these points in such a manner that the sum of the values equals one hundred." It is not necessary however that the sum of the values equal one hundred as some score cards have one thousand as the total and others have other numbers of units distributed. A third

item may be added which if not essential is as truly important as an element contributing to the successful use and application of the score card. It is the description of the ideal and other degrees of excellence of each element of the thing to be measured as nearly as such degrees of excellence can be ascertained from experience.

In many instances the description of the degree of excellence is supplemented by drawings and photographs depicting the various degrees of excellence, particularly the ideal types. In such instances where the thing to be measured is of such nature as to admit the use of these devices the usefulness of the score card is no doubt enhanced to a considerable extent. A score card for hogs used by the agricultural extension service of North Carolina contains a drawing of a hog with the various parts indicated and besides contains four reproductions of photographs labeled as follows: "A Berkshire sow in show condition" "A Poland China sow in show condition" "A Duroc Jersey sow in show condition" and "A Chester White sow in show condition." While these photographs are no doubt helpful to the student using the score card it is perhaps true that photographs showing different degrees of excellence would be of even greater value.

A sample score card. The following score card is typical of a large number of cards on many subjects and furnishes an example of most of the elements mentioned in the description.

SCORE CARD FOR CHEESE (1)

Explanation	Perfect Score	Score Given
Flavor - It should be clean, not flat or strong, neither too much acid or too little acid, not sour, cowy, weedy, taint- ed, bitter, fishy.	50	
Texture - It should be close, not porous; no mechan- ical holes, pin holes, or fish eye holes.	15	
Body - It should be firm, smooth, not waxy, pasty, weak bodied, stiff or corky, crumbly, gritty or watery.	15	
Color - It should be straight and translucent not light, high mottled, streaked, wavy, white specks, seamy and cut, red spots, uncolored.	10	
Salt - Neither too much nor too little salt.	5	
Appearance - Finish refers to package, It should not have cracks, light spots, round rings, uneven ends, uneven edges, wrinkles, bulges; but should be neat, clean and uniform.	5	
<hr/>		
Total	100	

History of the score card. The score card as an instrument or device for measurment is not a new idea, but has been in use for almost a hundred years. More attention has been given to the use of the score card in the field of agriculture than in other fields, score cards having been devised for the measurement of practically all the important products of the farm, and more recently of the products of the home. According to Gray (1) "This plan for measuring has been developed and brought to a high degree of perfection by agriculturalists." The study of more than three hundred score cards used in the various colleges of agriculture seems to indicate that the results of such development are neither accurate nor scientific. Some of the results of this study are given in another chapter of this report.

One of the earliest score cards was that devised to aid in selection of Jersey cows (13). It was formulated as early as 1832 and adopted by the Royal Jersey Agricultural Society in 1833. The score card was then called a "scale" and was made up of thirty-four "articles." This scale was based upon the conformation of the two most desirable cows to be found; the good points of the two cows were combined and used as a basis of the scale.

This scale contained the following points or articles each of which was given one "count."

1. Head, small, tapering
2. Cheek small
3. Throat clean
4. Muzzle firm and encircled with light color
5. Nostrils high and open
6. Horns smoother crumpled not too thick at base and tapering
7. Ears of deep orange color within
8. Ears small and thin
9. Eye full and placid
10. Neck straight, firm, placed well on shoulders
11. Chest broad and deep
12. Barrel hooped, broad and deep
13. Well ribbed barrel having little space between last rib and hip
14. Back straight from withers to top of hip
15. Back straight from top of hip to setting on of tail and tail at right angles with back
16. Tail fine
17. Tail hanging down to hocks
18. Hide thin and movable
19. Hide covered with fine soft hair
20. Hide of good color
21. Fore legs short straight and fine
22. Fore legs swelling and full above the knee
23. Hind quarters from hock to point of rump, long and well filled up
24. Hind legs short straight below hocks and bones rather fine
25. Hind legs squarely placed not too close together when viewed from behind
26. Hind legs not too close in walking
27. Hoofs small
28. Udder full in form well in line with belly
29. Udder well up behind
30. Teats large, well placed, wide apart behind
31. Milk veins very prominent
32. Growth
33. General appearance
34. Condition

Comparison of first Jersey score card with later ones.

It will be noticed that on this scale twenty seven counts are given for conformation or body form, four counts for mammary development, three counts for growth and general appearance. The latest scale as adopted by the American Jersey Cattle Club allows forty eight counts for temperament and constitution, thirty eight for mammary development and fourteen for size and appearance. Stating this comparison another way, the percent of value given to the three features of the cow's make-up is as follows:

	Old Scale	New Scale
Temperament, constitution, and conformation	79%	48%
Mammary development	12%	38%
Size and appearance	9%	14%

These differences indicate a marked change in the score card some of which is undoubtedly due to the differences in view point of those who made the two scales. The scale adopted in 1853 by the Royal Society was used for forty years by the American Jersey Cattle Club. In 1875 a committee of the American Jersey Cattle Club endeavored to formulate a scale which would "furnish a practical estimate of the comparative dairy significance of the different parts of the animal, giving the highest number of counts to those features of the cow which experience has shown to indicate most certainly the great milker and butter maker (13)." One change which indicated a recognition of milking qualities rather than ornamental purposes of the dairy cow was the addition of "escutcheon" with a value

of eight counts to the list of points. The escutcheon was supposed to be a good indication of milking qualities and was called the milk mirror. It was the basis for much contention in further revisions of the Jersey score card. It is mentioned here because it is a good example of a point of quality taken as an index to good qualities in general and given a high value because the correlation with general merit seemed to be high.

Later development (13). The further development of the score card for Jersey cattle may be briefly stated. In 1884 the Board of Directors of the American Jersey Cattle Club formulated a revised scale. In 1896 a committee was appointed to consider a revision and the members of the club in attendance at the annual meeting that year voted to make some changes but the matter was dropped when it was referred to the Board of Directors. In 1902 another committee was appointed which reported the following year and many changes were adopted, the scale adopted at this time being the first to separate the qualities into main divisions, the rubrics and values assigned being as follows:

Head	7
Neck	5
Body	33
Tail	2
Udder	28
Teats	8
Milkveins	4
Size	3
General appearance	10

In 1911 another committee composed of the three

leading Jersey breeders (2) was appointed. This committee compared the scale with those adopted by other breed associations and reported a form which was adopted in 1913. It is interesting to note that the scale in use at the present time allows less than 25% of the value for the so-called fancy points. Such development indicates a difference in the view point of breeders during the two periods and means that the scale of points did not make the Jersey cow but the Jersey cow made the scale of points. While the scale of 1833 was based upon the good qualities of but two cows the present scale has grown out of the experience of breeders for almost a century.

Present use of score cards. The general use of score cards has been to measure results in an objective manner but the modern tendency as ascertained by correspondence with many who make much use of score cards is to use them as guides in the performance of activities and in the development of certain objectives. Thus the agricultural score card today is being used to acquaint the student with the elements concerned in the make-up of an animal or a sample of corn rather than as an instrument of measuring in terms of percent the degree of excellence of the animal or the sample of corn. The analysis of the thing to be scored has become the important phase of the score card and the evaluation of rubrics in terms of percent has become of secondary importance. This is no doubt the result of the lack of uniformity of score cards and lack of agreement on the part of those who develop score cards as to the relative value of the component elements.

(2) G.W. Sisson - C.J. Hudson - C.D. Hazen.

Score cards in other fields. The use of the score card in the class room for measuring results of ^{the} teacher's efforts and the work of the student is of more recent origin. Some score cards for measuring efficiency of teachers have been devised by Sprague (2) Elliott (7) Boyce (9) and others, most of which have appeared within the last decade.

A score card for the measurement of hand writing was devised by Gray (1) in 1915 in the making of which the author made an extensive analysis of handwriting and consulted the opinions of a large number of experts as a guide. The score card resulting from Gray's investigation is as follows:

Weights		
1.	Heaviness	3
2.	Slant	5
3.	Size	7
4.	Alignment	8
5.	Neatness	13
6.	Spacing of letters	18
7.	Spacing of words	11
8.	Spacing of lines	9
9.	Formation of letters	26

Freeman (6) analyzed the process of handwriting into its various rubrics and presented charts showing how to measure handwriting. Many other types of score cards and scales have been developed for use in the class room.

The present problem. In as much as the teaching of vocational agriculture in the secondary schools has become a reality and those who study agriculture are required to do much work outside of school, much attention has been given to the

nature of the work outside, designated as the home project. There is need for an analysis of the home project work in agriculture into its essential rubrics and for some means of measuring the project which is inherently different from the ordinary classroom work of the high school. To devise a score card that may be used as an instrument to aid in directing and evaluating home project work in the field of agriculture is the purpose of this study. The first step in the problem is the analysis of the project into its important elements. The next step is an evaluation of the rubrics or elements obtained by such an analysis. Another important phase of the problem is the establishment of a scale indicating varying degrees of excellence in accomplishment. Inasmuch as the home project as a phase of agricultural education has only recently assumed a definite place in the program, the analysis of the project must be more or less arbitrary at first. The experience of teachers of agriculture in conducting home projects is meager but it furnishes a basis for a beginning in the solution of the present problem.

CHAPTER II

A STUDY OF AGRICULTURAL SCORE CARDS

A consideration of score cards and their use as teaching devices and as measuring devices suggested the following questions about score cards in use at the present time.

1. What degree of uniformity may be expected among score cards on a topic with reference to rubrics and the value assigned them?
2. What is the present attitude of college instructors toward the use of score cards?
3. What methods have been used in constructing the score cards and what methods merit most consideration?

Material collected. As a preliminary study it was thought best to collect and examine a large number of score cards on the various subjects for which score cards have been devised. Accordingly, letters were sent to all agricultural colleges and the state experiment stations asking for copies of such score cards as were available for distribution and which were being used by the instructional staff of the college. Criticism of the score cards and of the score card as a method or device in teaching, was invited.

Results. The replies to this request offered some criticism of the score card but the criticisms were not numerous enough to warrant any definite conclusions from them. However, a large number of score cards were received, the number totaling more than 300, covering more than a score of topics. From this number 128 score cards were selected dealing with nine different topics in the field of agriculture as shown in the table. The score cards were classified into nine sets on the basis of the subjects with which they dealt, and were compared for the purpose of determining the following facts: variation in the number of rubrics appearing on the score cards dealing with a single subject, the degree of variation in value assigned to the rubrics which appeared on more than one card in a set, the number of rubrics which appeared on all cards of a set, the number of these rubrics which were given the same value on all cards, and the total number of different rubrics appearing in each set. Table I shows the data giving the above facts. Both the main rubrics and the sub-rubrics were compared.

TABLE I

Data regarding 128 score cards on agricultural topics

Number of Score cards studied	Draft Horse.	Light Horse.	Mutton Sheep.	Wool Sheep.	Lard Hog.	Bacon Hog.	Beef Cattle.	Mules.	Corn.
	23	10	16	10	21	6	22	5	15
Smallest Number rubrics on one card	M 0 S 22	4 31	5 0	6 15	4 5	0 18	5 21	5 29	0 9
Largest Number rubrics on one card	M 6 S 48	7 43	7 30	7 34	20 23	5 23	6 31	7 40	3 15
Average Number rubrics per card	M 5.1 S 37.3	5.8 40.0	6.1 24.2	6.3 24.9	7.3 15.0	4.1 21.3	4.6 23.7	5.6 34.6	.7 12.3
Widest variation in value between same rubrics on different cards	M 28 S 11	21 5	26 10	13 10	17 5	6 6	15 7	11 6	15 10
Number rubrics appear- ing on all cards	M 3 S 11	1 26	1 1	0 13	0 4	0 11	0 10	5 21	0 1
Number rubrics given some value on all cards	M 0 S 0	0 10	0 0	0 4	0 0	0 0	0 0	0 5	00 0
Total Number of diff- erences among all cards	M 10 S 54	8 45	11 35	15 39	28	5 27	10 40	7 43	4 38

The table should be read as follows:

Twenty three cards on the draft horse were compared. The number of main captions or rubrics appearing on the score cards varied from none to six, and the number of sub-captions varied from twenty two to forty eight, the average number of the former being 5.1 and the latter 37.3. The widest variation in value or weight assigned to any one main rubric appearing on more than one card was twenty eight, while the widest variation in value assigned to a sub-caption was eleven. The number of main rubrics appearing on all cards of the set was three while eleven sub-captions appeared on all of the twenty three cards. None of the rubrics appearing on all the cards were given the same value on all cards. The total number of main rubrics found in the set was ten and the total number of sub-captions was fifty four. The data shown in the table indicate that score cards as they are now being used have little or no uniformity - either in make-up or in the value assigned to the various rubrics on the score cards. The following facts which may be verified by reference to the table are particularly significant.

1. No two cards in the list are exactly alike.
2. Not a single main rubric is assigned the same value on the cards dealing with a subject, and in only three instances do rubrics appear with the same value on all cards.
3. In each case the total number of rubrics mentioned is considerably greater than the largest number

appearing on any one card indicating a wide variation in the terminology and choice of rubrics.

4. There is a wide variation between the smallest number of rubrics per card and the largest number per card.
5. The number of different captions appearing on all cards dealing with one subject is very low as compared with the total number of captions represented.

Particularly significant are the data regarding the corn score card, the average number of sub-rubrics per card being 12.3 while there are thirty eight rubrics mentioned on the fifteen cards. Such data indicate a very wide variation among the cards. There is no doubt some reason for variation among corn score cards inasmuch as different regions require different standards of excellence. No main rubric is mentioned on all cards and only one of the thirty eight sub-rubrics is mentioned on all of the fifteen cards.

No definite data could be secured as to the origin of these cards except the statement that the card was the work of a committee or some individual interested in the subject. In no case can we be sure that any large number of opinions are represented in the make-up of a single card although the data on the question will not admit definite conclusions. The variations indicate that comparatively few people were concerned in making each of the cards. The fact that there are such a

large number of different score cards upon a single subject leads to the conclusion that there is a decided lack of standardization of score card materials and that little uniformity in their use is possible.

These data may furnish us with some reasons why instructors seem to give less attention to the score card as a teaching device than formerly. They indicate a need for some method of standardization which has not yet been used, inasmuch as no method seems to have accomplished much in the direction of standardization.

A number of score cards intended to be used as devices in measuring the quality of work done by teachers were compared. The results showed wider variation in the terminology and in the weighting or evaluation of points than is found in the agricultural score cards.

Summary. In answer to the questions raised at the beginning of this chapter, it is apparent first of all that there is a decided lack of uniformity with reference to the rubrics and their value. From the available data it seems that college instructors have less faith in the score card as a measuring device than was formerly given it and that more attention is being given to the score card as a guide in teaching and as a guide for the student in the learning of certain facts. The data concerning the methods used in constructing score cards is ^{too} meagre to warrant conclusions. However the methods used in developing certain score cards notably the one on handwriting by Gray (1) the one for rating teachers by Boyce(9)

and other similar studies do indicate the methods used. The lack of uniformity seems to indicate that the judgment of those who constructed the score cards was not expert in many instances, or that local conditions affected the content of the score card or that too few judgments were considered in each instance. An effort has been made in the present study to obtain such a number of judgments as to overcome the results of personal prejudice and to seek out expert opinion in so far as such a procedure was possible. The method used will be described in another chapter.

CHAPTER III

PROCEDURE

The problem. Our problem is the development and formulation of a score card to be used as a device in teaching by the project method and in judging the success or failure of home projects in agriculture. A cardinal virtue of the score card as a method or device for teaching lies in the analysis of the subject which accompanies the use of the card. The analysis of the subject of the problem then becomes the first step in the development. Much of the success attending the project work depends upon a proper analysis of the job to be done, and the judgment of the teacher as to the success or failure of the project must depend upon the analysis in as much as there are many contributing factors to the general success or failure of the student all of which must be duly considered if an accurate estimate or evaluation of the student's effort is secured. The scientist realizes that objects or substances are of compound composition and must be analyzed in order that their intrinsic value may be determined, thus milk as a substance is analyzed into its component parts and the butter fat which it contains becomes the index or basis for selling milk and cream because in the opinion of experts and laymen, the butter fat is the most important, at least the most desired constituent. In making an analysis of an abstract subject one cannot obtain objective component elements as in making an analysis of milk.

Even though objective results are sought, the method of determining them must be largely subjective.

Methods of analysis. The first method of analysis that suggests itself is that of making an arbitrary analysis of the project into such component factors as seem to be pertinent in the opinion of those making the analysis. The objection to this method is the one which obtains in case of score cards already in use and which has been responsible as nearly as can be determined for the wide variation in score cards.

A second method of analysis suggesting itself is to ask a rather limited group of experts to analyze the project into such parts as they as individuals believe should form a basis for the score card and then construct the list of factors from the list offered, upon the basis of frequency. Again the objection of a possible lack of uniformity confronts us, due to the unsettled conditions under which project work is conducted at the present time. Gray (1) uses a method which is a combination of an arbitrary choice of elements and a selection growing out of the use of the score cards by teachers. A handicap which confronts us in the present problem, however, in employing such a method is the fact that project work is in its infancy in the field of vocational education and it would be very difficult to find a group of teachers with similar viewpoints and similar conditions. However, some use of this method has been made, a combination of opinion of experts, arbitrary choice, and application of the score card has been used in the development of the score card. The steps in the plan which has been followed

are as follows:

1. An arbitrary analysis of the home project in agriculture was made by the writer with the help and advice of certain members of the faculty of the College of Education at the University of Illinois, who had given much time and thought to the project as a method of teaching.

This tentative analysis netted the following set of rubrics or elements which were in turn analyzed into their contributing elements.

Skills
Knowledge
Income
Records
Attitudes

2. A score card (1) containing these rubrics and the subdivisions was submitted to a group of twenty five teachers of vocational agriculture in secondary schools in Illinois. The problem was presented to the teachers in conference and after discussion of the topics, those present were asked to take the score card and apply it in their work, to the home projects then in progress, and to evaluate the main rubrics and return the score card to the author. Each teacher returned the score card after a month's time for consideration and many of them offered criticisms of the score card. The result of the weighting at that time was as follows

Rubric	Mode	Mean
Skills	15.00	17.85
Knowledge	30.00	28.80
Income	10.00	9.88
Records	10.00	14.40
Attitudes	30.00	29.00

This cooperative suggestion from those with experience in directing and supervising home projects

seemed to substantiate the judgment of those who had helped to analyze the subject.

3. Letters were sent to fifty individuals (2), teachers, school administrators and professors of education known to have given much attention to the project method, with a request that they give the names of a few teachers who had been successful in using the project method and inviting them to suggest a possible set of rubrics for the score card.

Twenty six replies to this letter were received giving suggestions and the names of teachers who in the opinion of the writers had been successful in teaching by the project method. Twelve of these answers offered a very definite set of elements to be considered in judging a home project. The following list of terms are taken from these letters and indicate the trend of thought of the writers. The terms in each group represent the rubrics suggested by the writer of the letters called "Letter A" etc.

Letter A.

Scope
Correlation with school work
Records and accounts
Economic returns
Educational value

Letter B.

Skills
Problem approach
Understanding
Social implications
Managerial efficiency
Progress in efficiency

Letter C.

Duplicate problems of life

Letter D.

Habits
Skills
Attitudes
Understanding

Letter E.

Cars
Condition
Accounts
Notes

Letter F.

Problem
What leads to problem
Plans
Purpose
Results
Growth in power to further work

Letter G.

Initiative
Motivation
Organization

Letter H.

Economic success
Educational success
Skills

Letter I.

Application
Interest
Plan
Outcome
Parent's co-operation

Letter J.

Records
Plan
Income
Conclusions
Preparation
Carrying out plan

Letter K.

Setting up end to be achieved
Plan
Self directed execution
Result
Processes developed

Letter L.

Knowledge (new)
Economic gain

The letters gave the names of forty five teachers (3) who were regarded as successful teachers using the project method. They were not all teaching agriculture, some were supervisors, some were grade school teachers, and some were high school teachers.

4. The original set of rubrics was revised and enlarged by taking into consideration the suggestions received in the above mentioned replies. Thus a suggested score card (4) was constructed containing ten main rubrics each of which was subdivided into three or more subrubrics.
5. This suggested score card together with a letter (5) was sent to each of the individuals whose names were suggested by those who replied to the first request and to the individuals who had already made suggestions.

Twenty four answers to these letters were received, twelve of them offering an evaluation of the points on the score card as requested in the directions. The combined weights assigned to the various points by the twelve individuals indicated a ranking of the main captions as follows:

Mode of performance	1 (6)
Plan	2
Attitudes	3
Knowledge	4
Efficiency	5
Records	6
Income	7
Skills	8
Initiative	9
Time	10

The criticisms offered by the individuals who

(3) Appendix Exhibit C. (4) Exhibit D. (5) Exhibit E.

answered the letters may be summed up as follows:

Criticisms on the rubrics included in the score
card for judging the success or failure of the project.

Main rubric No. 1. - Plan.

The objection is made to the statement that the plan is necessary.

The extent to which execution follows the plan is not important.

The plan may be made so rigid that the purpose of the project is defeated.

"Initiative in planning" would function better under the main caption "Initiative."

The execution of the project should not follow a rigid plan.

Execution of the project belongs under the caption II or IV.

"Efficiency of pupil in performance," and "Mode of performance."

Subcaption "Pupil's initiative" and extent to which execution follows the plan belong under the main caption "Efficiency of pupil in performance."

The plan should be modified.

Add a subcaption to the first main caption "Scope of project."

(6) Rank 1 is assigned to the rubric considered most important.

Main rubric No. 2. - Efficiency of pupil in performance.

Combine subcaptions 2 and 3, "Application of principles" and "Judgment."

"Application of principles" should include not only application, but development of principles.

Combine 2 and 3.

Combine 2 and 3 and place under main caption 8 "Knowledge."

Combine 2 and 3.

Main rubric No. 3. - Records.

Little value should be given to notes on reference readings unless the notes are taken for the benefit of others.

Objection is made to "Records" as a title for a caption. "Conclusions" important enough to occupy the place of subcaption.

Omit the word "Detail" from subcaption 3, do not require minute detail.

Main rubric No. 4. - Mode of performance.

There is no difference between punctuality and regularity.

Subcaption 4, "Exactness" is a repetition from "Records."

Main caption 4, "Mode of performance" is sufficiently covered under "Efficiency of performance" and "Records."

Combine punctuality and regularity.

Give full weight to "Mode of performance" if we can be sure there are no artificial standards.

Include all of caption 4 in caption 2.

Main rubric No. 5. - Time.

Relative value, depending upon the project.

Do not give credit for more time than the actual results will justify.

Time put in on work accomplished and not total time; caption seems to have been misinterpreted.

Time should be included as data under the caption or heading "Records."

Combine "Time" and "Economic income."

Unfair to mark time because of the lack of standardization of projects.

Omit the caption altogether.

Place under "Records."

Separate into "Time spent in preparation," "Time spent in actual work," and "Time spent in writing up records."

Questionable as a main caption, not usable until standards have been worked out.

Main rubric No. 6. - Economic income.

Total income rated high as an indication of the size of the project, otherwise should be rated low.

Percent of profit more important than total income.

Economic income will vary according to the project.

Should be placed under caption 3, "Records."

Economic income may be an index to Educational development, but care should be taken to make sure of it.

Main rubric No. 7. - Skills.

Add the word "Habits" to main caption.

Very difficult to rate habits and skills.

Add as a subcaption "Probably future value of skills."

Main rubric No. 8. - Knowledge.

What standards are there to be used as a basis?

How determined?

Emphasis should be placed upon organization of subject matter.

Impossible to evaluate subcaption No. 2, "Strengthening of first knowledge."

Value of knowledge lies in its use, therefore the emphasis should be placed upon the use of the knowledge rather than upon the possession of it.

Subcaptions 3 and 4 very good.

Main rubric No. 9. - Initiative.

Place "Initiative" under "Attitudes" as a subcaption since it is really one of the attitudes to be developed. Initiative is a part of the performance and

and planning of the project and should be included under these captions.

Include under caption 2, "Efficiency of performance."

Main rubric No. 10. - Attitudes.

Evidences of insight from implication might extend beyond this manifestation.

Subcaptions 1 and 2 are too much alike to be distinguished from each other.

If real interest is present pupil will wish to continue work.

Not only should application be considered in subcaption 4, but a development of new principals.

A very accurate measure of the value of the project to the boy and his family is found in the attitude of the boy toward his work.

This caption should be rated higher.

Interest ends with subcaption No. 1.

Not only should evidence of cooperation be considered, but evidence of an attitude of service is important.

This question of attitudes is a "re-hash" of the values named in the other captions.

With the above criticisms in mind another arbitrary rearrangement and reorganization of the material was made. The important changes made are as follows:

Under main caption No. 1. Plan, the fourth subcaption

"Extent to which execution of the project follows the plan" was omitted because of a number of adverse criticisms and because it was found upon application of the score card to projects that the point was not an important one, indeed that a deviation from the plan in many instances not only enhanced the value of the project but that such deviation was frequently caused by circumstances not necessarily foreseen and thus did not detract from the value of the plan.

The subcaptions under "Efficiency in performance" were combined under three heads, "Judgment," "System" and "Punctuality," inasmuch as the "Application of scientific principles" was considered by many as a part of good judgment and that "managerial skill" was a part of a larger phase of Efficiency - "System."

The subcaption "completeness" under "Records" was made to include "Notes on reference reading," "conclusions" etc., which eliminated subcaptions 3 and 4. Many adverse criticisms to "Mode of performance" were offered. Upon further consideration it was thought best to eliminate the caption because the items had been considered under "Efficiency" and "Records."

It was argued effectively that time was not a salient feature of project work as such but should be considered only as one of the items in the records of the work done. The criticisms emphasized the point that a student who spent more time on a certain project than another student might deserve less credit than one who spent less time, thus making it impracticable to attempt any evaluation on the basis of amount

of time spent.

The second subcaption under "Knowledge" was eliminated because it seemed to be an impossible task to measure the strengthening of former knowledge.

"Initiative" as a rubric was omitted because it seemed to be a part of some other phase of the project such as planning, system, judgment exercised and records, being evidenced in each of these phases.

Under attitudes the subcaption "Desire to continue work" was eliminated because it was considered a part of the interest shown by the pupil.

In general the score card was made much more concise by the reorganization of material and the elimination of many items which seemed to be covered by other captions. This reorganization resulted in the arrangement as shown in Exhibit G.

This score card and an accompanying letter (7) was sent to 1000 individuals including teachers of vocational agriculture, supervisors of agricultural education and teacher training instructors. It was thought that from such a number of individuals interested in vocational agriculture a number of replies large enough to overcome the extreme and biased opinions could be secured and furthermore that such individuals were the most competent judges to be secured. The individuals were requested to rank the rubrics and to score them, considering only the main rubrics. The results of the request are given in the following chapter.

CHAPTER IV

RESULTS

Scope of data. Two hundred and sixty replies to the letters sent out were received and are considered in the tabulations presented in this chapter (1). Table II shows the frequency of mention of the seven possible ranks assigned to each rubric. The rubrics are designated by the letters, A, B, C, D, E, F and G (2), as shown in Exhibit G. Only 245 replies were considered in making the tabulation shown in Table II, the remainder being in such form as to make it impossible to determine the intended ranking. The table should be read as follows:

56 judges ranked rubric A first or most important, 56 judges considered A as being second in importance, 25 judges considered it third in importance, 50 judges ranked it fourth, 29 judges ranked it fifth, 21 judges ranked it sixth and 8 judges considered it least important of the rubrics.

TABLE II

Rubrics	1	2	3	4	5	6	7	Total
A	56	56	25	50	29	21	8	245
B	5	20	52	30	52	65	21	245
C	90	66	46	26	15	2	0	245
D	13	8	14	15	21	38	136	245
E	6	14	16	38	62	71	38	245
F	31	45	61	51	32	20	5	245
G	48	37	34	42	33	25	26	245

(1) Not all the replies were complete, hence none of the tables includes data from the entire number of replies.

Table III is similar to table II except that the scores assigned to the various rubrics are used as a basis instead of the ranks assigned by the judges. The data shown in Table III are compiled from the replies of 237 judges who assigned scores as directed. The table should be read as follows:

rubric A was given a value of 4 by one judge, a value of 5 by 12 judges, a value of 6 by one judge, etc.

TABLE III

Rubrics	A	B	C	D	E	F	G
1	0	0	0	0	0	0	0
2	0	0	0	1	2	0	2
3	0	2	0	4	1	1	0
4	1	2	0	5	4	0	1
5	12	10	2	69	28	8	12
6	1	0	0	4	0	0	0
7	2	5	1	6	5	0	2
8	2	12	0	14	16	5	4
9	0	0	0	7	6	0	6
10	46	89	13	75	94	43	55
11	2	2	0	3	3	2	0
12	8	13	0	8	15	7	10
13	3	3	3	0	9	3	2
14	1	4	4	0	1	10	3
15	52	46	45	21	32	66	45
16	3	5	4	1	3	2	5
17	2	3	4	0	1	6	3
18	8	3	7	0	1	14	5
19	0	1	1	0	0	2	0
20	65	33	69	8	13	47	50
21	1	0	2	0	0	1	1
22	3	0	3	0	0	0	0
23	0	0	2	0	0	0	2
24	0	0	1	0	0	0	1
25	17	2	47	5	1	13	20
26	0	0	1	0	0	0	0
27	0	0	0	0	0	0	0
28	1	0	1	0	0	1	0
29	0	0	0	0	0	0	0
30	4	2	19	0	0	2	5
31	0	0	0	0	0	0	0
32	0	0	0	2	1	0	0
33	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0
35	0	0	2	2	1	2	1
40	3	0	3	1	0	0	1
50	0	0	3	1	0	1	0

From Table II, Table IV is derived showing the average rank assigned to the seven rubrics by multiplying each rank by the frequency with which it was assigned to each rubric and adding these products to obtain the sum of the weighed ranks for each rubric. The rubric having the smallest total or combined rank is given first rank indicating that it is most important. The table is read; rubric C was assigned first average rank by 245 judges, rubric A was assigned second rank, etc.

TABLE IV

Average ranks assigned to each of the seven rubrics by 245 judges who ranked the rubrics.

<u>Rubric</u>	<u>Sum of products</u>	<u>Aver. rank.</u>
C	551	1
A	770	2
F	819	3
G	889	4
B	1118	5
E	1236	6
D	1416	7

Table V is derived from Table III in the same manner that Table IV is derived from Table II, by multiplying the value assigned to a rubric by the frequency with which it was assigned and adding the products to obtain the total value or weight assigned by 237 judges to each rubric. The table also shows the average value given to each rubric, determined by dividing the total value assigned by the judges by the number of judges - 237.

- (2) The rubrics are lettered as they appear on the suggested score card in Exhibit G. A - Plan; B - Records; C - Efficiency in performance; D - Economic income; E - Skills;

TABLE V

Average ranks assigned to the rubrics by 237 judges who scored the rubrics and average values assigned to each rubric.

<u>Rubric</u>	<u>Total score</u>	<u>Aver. rank</u>	<u>Aver. value</u>
C	4891	1	20.64
A	3817	2	16.10
F	3706	3	15.64
G	3640	4	15.37
B	3022	5	12.75
E	2579	6	10.87
D	2339	7	9.87
Total -			<u>101.24 (3)</u>

It is significant that the same rank is obtained for each rubric by both methods, by averaging the ranks assigned by 245 judges and by averaging the scores assigned by 237 judges. A majority of the judges who ranked and scored the rubrics did not distinguish among some of the rubrics as to importance when assigning scores or weights but did do so when assigning ranks. This fact is evident from the data shown in the better judgment table (Table VII) made up on the basis of values assigned. Since this is true it is particularly significant that the rubrics are given the same rank by the judges when they ranked them as is given when the judges scored the rubrics.

(2) continued. F, Knowledge; G, Attitude.

(3) The difference between a total of 100 points and the total obtained by adding the average values assigned is accounted for by the fact that some judges did not assign exactly 100 points to the seven rubrics.

A "better judgment" table was derived from the ranks assigned by the 242 judges by ascertaining the frequency with which each rubric was ranked more important than each of the other rubrics. Table VI shows these data. It is read as follows:

rubric D is judged to be more important than rubric E by 67 judges, more important than B by 54 judges, more important than G by 58 judges, etc. Likewise E is judged to be more important than B by 105 judges, more important than G by 70 judges, etc. Such a table is necessary as a basis for determining from the ranking of the rubrics the relative weight or value to be given to the various rubrics in making up the final score card.

TABLE VI

Better judgment table showing the number of judges who ranked each rubric higher than each of the other rubrics

Rubrics	D	E	B	G	F	A	C
D		67	54	58	30	39	21
E			105	70	42	51	19
B				91	71	61	31
G					109	111	79
F						110	65
A							85
C							

Table VIa is derived from table VI by changing the number of judgments in each instance into percent of judgments by dividing the number by 242, the total number of judgments considered. It is read as follows:

rubric D was judged to be more important than rubric E by 28% of the judges, more important than B by 22% of the judges, etc.

TABLE VIa

Percent of better judgment showing relative importance of each rubric as compared with each of the other rubrics.

Rubrics	D	E	B	G	F	A	C
D		28	22	24	12	16	9
E			43	29	17	21	8
B				28	31	25	13
G					45	46	33
F						45	27
A							35
C							

A better judgment table was likewise obtained upon the basis of the values assigned to the rubrics by 243 judges. As stated above many judges did not distinguish among all the rubrics on the score card in assigning values but gave an equal weight to two or more rubrics. Because of this fact it was necessary to arrange for three sets of data in compiling a better judgment table, one set showing the frequency with which judges ranked a rubric equal to other rubrics, another showing the frequency with which the rubric was considered less important than other rubrics and another set showing the frequency with which the rubric was considered more important than other rubrics. Table VII shows these data and is read as follows:

rubric D is judged to be less important than rubric E by 129 judges, to be equal to rubric E by 59 judges and to be more important than rubric E by 55 judges, etc.

TABLE VII

Better judgment table based upon values assigned to rubrics by 243 judges.

Rubrics																		
D	E			B			G			F			A			C		
	L1	E	M1	L1	E	M1	L1	E	M1	L1	E	M1	L1	E	M1	L1	E	M1
D	129	59	55	151	50	42	166	30	47	156	184	30	177	25	41	210	15	18
E				123	47	73	163	34	46	168	49	26	172	26	45	200	27	16
B							124	45	74	145	32	66	142	46	55	181	38	27
G										108	44	91	110	33	100	151	28	64
F													110	39	94	156	31	56
A																143	36	64
C																		

Table VIIa is derived from table VII by changing the number of judgments in each instance into percent. It is read as follows:

rubric D is judged to be less important than rubric E by 53% of the judges, to be equal to rubric E by 24% of the judges and to be more important than E by 23% of the judges, etc.

TABLE VIIa

Table showing percent of better judgment as based upon the values assigned by 243 judges.

Rubrics																		
D	E			B			G			F			A			C (4)		
	L1	E	M1	L1	E	M1	L1	E	M1	L1	E	M1	L1	E	M1	L1	E	M1
D	53	24	23	62	21	17	69	12	19	76	12	12	73	10	17	87	6	7
E				51	19	30	67	14	19	69	20	11	70	11	19	82	11	7
B							51	19	30	60	13	27	58	19	23	75	14	11
G										44	18	38	45	14	41	62	12	26
F													45	16	39	64	13	23
A																59	15	26
C																		

(4) L1 stands for less important
 E " " equal to
 M1 " " more important

Table VII and VIIa are not used in further calculations in this study but are given at this point to indicate the difference in judgments as rendered by the same judges by the two methods, that of assigning ranks and that of assigning values or weights. An example of this difference, from a comparison of tables VIa and VIIa will make clear this point. By reading from table VIa we have rubric D is judged more important than rubric E by 28% of the judges, hence less important than rubric E by 72% of the judges. From table VIIa we find that rubric D is judged more important than rubric E by 23% of the judges, less important by 53% of the judges but equal to rubric E by 24% of the judges. As has been stated this difference in judgments on the two bases does not make a difference in the average ranks assigned by the two methods. Table VIIa may be converted into a better judgment table similar to table VIa by dividing the equal judgments placing one-half of them in the column marked more important and one-half in the column marked less important. However the table obtained from the rankings is the more reliable because the judges distinguished among all the rubrics.

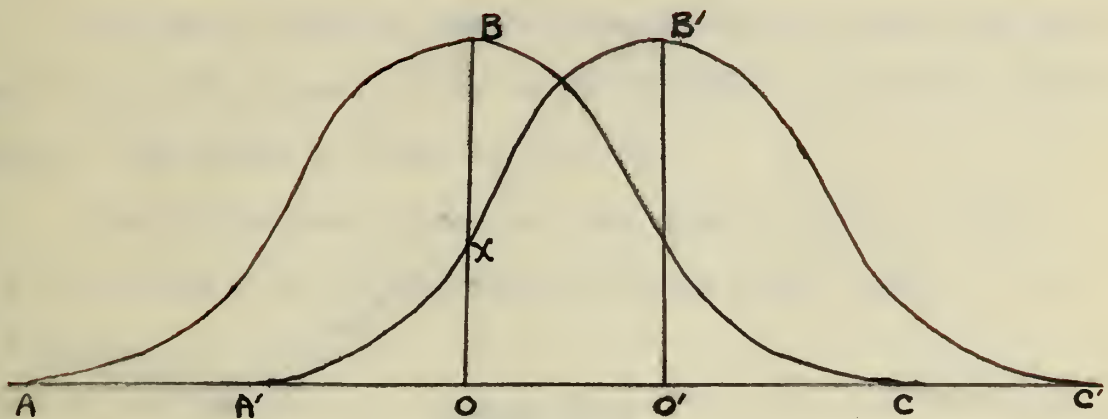


Table VIa may be illustrated graphically by Fig. 1. Let the curve A,B,C, represent the judgments on the rubric D with the line B,O as the median judgment and the curve A',B',C' represent the judgments upon rubric E with B'O' as the median judgment. According to the table 72% of the judges judge rubric E to be **more** important than rubric D, which means that the curve enclosing the judgments upon rubric E must be so placed as to throw 72% of the judgments within the space OXB'C', and the difference marked upon the base line by OO' represents the difference between the median of the judgments upon the rubrics D and E. By converting the 72% into P.E. value by reference to Buckingham's (17p116) conversion table we find that a difference 72% represents a difference on the base line of .864 P.E. when P.E. is defined as the difference which is recognized by 75% of the judges. If rubric D can be located upon the base line then the other rubrics can be located to the right at such distances

as the difference shown by judgments warrant. Rubric E will be located at a point .864 P.E. to the right of rubric D.

In table VIII the percentages shown in table VIa are changed into P.E. values by using Buckingham's conversion table (17p116). The table is read as follows:

the difference in values assigned to rubric D and rubric E is .864 P.E., that between rubric D and rubric B is 1.45 P.E. etc.

TABLE VIII

P.E. values showing difference between rubrics upon the basis of the ranks assigned by 242 judges.

Rubrics	D	E	B	G	F	A	C
D		.864	1.45	1.047	1.742	1.475	1.988
E			.261	.820	1.415	1.196	2.083
B				.453	1.196	1.000	1.670
G					.187	.149	.652
F						.187	.909
A							.571
C							

The differences between rubrics expressed in terms of P.E. or distance upon the base line may be determined by using only one value for each rubric - the one nearest the diagonal line O.X. in table VIII drawn from the upper left hand corner to the lower right hand corner of the table, or by averaging the values for each rubric obtained by comparing the rubric with the one nearest it in importance and with the one next in importance etc. Such an average, however would give one instance in a negative result causing a change in the order of the rubrics and it was decided to use only the P.E. values representing the difference between each rubric and the one next in importance as

determined by the ranks assigned. Thus table IX is derived from table VIII and is read as follows:

Difference in values assigned to rubric D and E = .864 PE									
"	"	"	"	"	"	D	"	B = .261	"
"	"	"	"	"	"	B	"	G = .453	"
"	"	"	"	"	"	G	"	F = .187	"
"	"	"	"	"	"	F	"	A = .187	"
"	"	"	"	"	"	A	"	C = .571	"

TABLE IX

Equations showing difference in P.E. values between each rubric and the one nearest it in importance.

$$\begin{aligned}
 E - D &= .864 \text{ PE.} \\
 B - E &= .261 \text{ " } \\
 G - B &= .453 \text{ " } \\
 F - G &= .187 \text{ " } \\
 A - F &= .187 \text{ " } \\
 C - A &= .571 \text{ " }
 \end{aligned}$$

From table IX table X is derived by comparing D, the rubric assigned the lowest value by the judges with each of the other rubrics.

TABLE X

Difference in P.E. values between rubric D and each of the other rubrics.

$$\begin{aligned}
 (1) \quad E - D &= .864 \text{ PE.} \\
 (2) \quad B - D &= 1.125 \text{ " } \\
 (3) \quad G - D &= 1.578 \text{ " } \\
 (4) \quad F - D &= 1.765 \text{ " } \\
 (5) \quad A - D &= 2.052 \text{ " } \\
 (6) \quad C - D &= 2.623 \text{ " }
 \end{aligned}$$

As suggested above the differences noted in tables IX and X may be expressed graphically by placing the rubrics at points along a horizontal line placed according to the differences indicated. Fig. 2. illustrates these differences.

It is now evident that if the value of P.E. is known and a definite value can be assigned to one of the rubrics the values of the other rubrics can easily be ascertained. Following the method used by Gray (1) these values can be determined.

Combining the equations in table X we have:

$$\begin{aligned} E + B + G + F + A + C - 6D &= 10 \text{ P.E.} \\ \text{Adding } D - D = 0 \text{ we have:} \\ E + B + G + F + A + C - 7D + D &= 10 \text{ P.E.} \end{aligned}$$

The sum of the points on the score card must equal 100 according to the instructions sent out to the judges. When 100 is substituted for the values of the rubrics the following equation is derived:

$$7D = 100 - 10 \text{ P.E.}$$

P.E. has been defined already as that difference in importance upon which 75% of the judges agree and may have more than one numerical value. Its value may be determined if the value of D is known - From table V the average value assigned to D by 237 judges is 9.87 when 100 points are distributed among the seven rubrics. Substituting this value for D in the equation we have:

$$\begin{aligned} 7 \times 9.87 &= 100 - 10 \text{ P.E.} \\ 10 \text{ P.E.} &= 30.91 \\ \text{P.E.} &= 3.1- \end{aligned}$$

Substituting the values 3.1 for P.E. and 9.87 for D in equations (1) to (6) the following table of values is derived.



Fig. 2.

Distribution of rubrics along base line showing P.E. differences.

TABLE XI

values assigned to rubrics on the basis of the P.E. values derived from the ranks assigned by 242 judges.

Rubric	Value	Whole no.
D	9.87	10
E	12.55	13
B	13.36	13
G	14.76	15
F	15.34	15
A	15.92	16
C	17.69	18
Total	99.49	100

By referring to table V another set of values may be found derived from the average scores assigned to the rubrics by 243 judges. These values are expressed in table XII.

TABLE XII

Average values assigned to rubrics by 243 judges.

Rubric	Aver. value assigned	Expressed in whole no.
D	9.87	10
E	10.87	11
B	12.75	13
G	15.37	15
F	15.64	15
A	16.10	16
C	20.64	20

From these data the following arrangement of the rubrics of the score card with values assigned by 242 judges who ranked them and by 243 judges who scored them is obtained.

Rubrics	Values from ranks.	Values from scores.	Aver.
(D) Economic income	10	10	10
(E) Skills	13	11	12
(B) Records	13	13	13
(G) Attitudes	15	15	15
(F) Knowledge	15	15	15
(A) Plan	16	16	16
(C) Efficiency in performance.	18	20	19
Total	100	100	100

It is suggested that the above arrangement of the score card with the average value as assigned be used for judging home project work in agriculture.

CHAPTER V

CONCLUSIONS AND SUGGESTIONS

Conclusions. From this study a number of conclusions may be drawn some of which have already been mentioned in the body of the text.

1. In the judgment of those who were consulted in regard to the analysis of the project the following seven rubrics appear to be the important ones concerned in the home project:
(A) Plan, (B) Records, (C) Efficiency in Performance, (D) Economic Income, (E) Skills, (F) Knowledge, (G) Attitude.

2. The relative importance of the above mentioned rubrics, according to 260 teachers of vocational agriculture is represented by the following average scores:

A	16
B	13
C	19
D	10
E	12
F	15
G	15

3. From the letters received from college instructors it appears that in their opinion the greatest usefulness of the score card is to be found in its value as a guide in teaching rather than as an instrument to measure objective results.
4. There is little or no uniformity among the score cards now in use which fact may be due to the small number of individuals concerned in constructing score cards.
5. The fact that the final results as obtained from the ranking of rubrics and from the scoring of the rubrics are so nearly identical indicates

that in this particular study the results of either method are indicative of the true judgment of the judges, although a large percent of the judges who discriminate among rubrics when they ranked them, did not do so when they scored the rubrics.

Uses of the score card. As stated in the introduction to this study it is not intended that this score card be used only as a instrument to measure objectively the results of the students' efforts but rather that it be used as a guide in teaching especially in directing the supervised practice of the students. The use of the score card for this purpose should minimize the tendency to emphasize certain features of the home project such as economic profit to the exclusion of other features calculated to increase the knowledge and intellectual capacity of the students. The score card may be used as a method of grading and comparing projects. It is true that certain rubrics notably "attitude" and "skills" do not lend themselves readily to objective measurement but even though the judgment of the teacher in rating these rubrics be subjective the analysis presented on the score card should aid the teacher in forming a judgment of the work of the student.

Suggested problems. Two problems present themselves for future study both of which are important from the view point of efficiency and economy in supervising home projects. Objective standards of excellence should be established where such standards are possible. For example the teacher needs to have a set of records showing different degrees of excellence in order to score "records" intelligently. The score card should show such examples of descriptions as would be helpful in rendering judgment. The second problem involves the correlation of each of the rubrics with general merit in the project and the correlation of each rubric with each of the other rubrics. For

example it may be that the records kept by the student furnish a good indication of the general merit of the project and that the correlation between records and general merit is high enough to warrant the use of records as a basis for evaluating project work. However, these two problems can be solved only after the score card has been used in connection with project work in agriculrue long enough to furnish plenty of data upon which a solution might be based.

APPENDIX

EXHIBIT A

A SUGGESTED SCORE CARD FOR EVALUATING
INDIVIDUAL PROJECTS

I Skills in performing the processes involved
in the project work.

The processes of each project
should be enumerated.

Does the pupil show evidence of
having developed skill in the
performance of these processes?
Are such skills the result of
practice or inherent ability?

II Knowledge.

a. Of principles involved in the
various processes.

b. Of related subject matter.

Does the student know the prin-
ciples upon which the processes
are based?

Is he able to relate these prin-
ciples to the processes?

Does he have knowledge of related
material?

Does he understand the relation
between such material and the
project?

Is he able to apply the knowledge
which he has acquired?

III Economic income or profit.

To what are any shortcomings in
this respect due - lack of know-
ledge, lack of application or
uncontrollable factors?

IV Records.

Are the records accurate? Are
they neat? Are they complete?
Do they show enough details?

V Attitudes, ideals and habits of industry
developed.

Does the pupil have an interest
in the work?

What prompts his interest -
economic income or a thirst for
knowledge?

Are there evidences of cooper-
ation?

Does the pupil desire to continue the work by enlarging his project?

Is the pupil's interest at the close of the project more intense than it was at the beginning?

Has the project been made a basis for demonstration in the community? If so, what part did the pupil have in such demonstration?

Is there evidence of an ideal having been developed which did not exist at the beginning of the project?

Has the pupil's attitude toward scientific agriculture become more favorable?

What evidences are there of a transfer to other activities of any attitudes, ideals and habits that may have been developed?

EXHIBIT B

Urbana, October 21, 1919.

Mr. W.F. Stewart,
Supr. Agr. Education,
Columbus, Ohio.

My Dear Mr. Stewart:

I am interested in developing a standard or score card for the purpose of judging the success or failure of the project. I am thinking of the term project as a group of purposeful activities on the part of the pupil, all of which are involved in the process of completion of a definite practice.

I have in mind particularly the agricultural project, such as growing corn, milk production or growing a garden. I am wondering if you can give me the names of a few teachers who have been particularly successful with the project method.

Will you be good enough also to suggest the captions or items, **which**, in your opinion should be considered in judging the **success** or failure of such projects as I have indicated.

Yours very truly,

CC:P

EXHIBIT C

Teachers successful in projects.

Clarence E. Lee,
New Milford High School,
New Milford, Conn.

John G. Powers,
Newport, New Hampshire.

John Glavin,
Brimfield, Mass.

R.O. Sussman,
Reading High School,
Reading, Massachusetts.

Miss Ruth Ewing,
North Carolina College for Women,
Greensboro, N.C.

Miss M.E. Rohr,
Delaware College,
Newark, Del.

Miss Ina Lindman,
Olivia, Minn.

Miss Ruby Minor,
Intermediate grades,
Kansas Sate Normal School,
Emporia, Kan.

Miss Jennie Williams,
Intermediate grades,
Kansas Sate Normal School.

Miss Florence Billing,
Junior High School,
Kansas State Normal School.

Miss Blanche Campbell,
Atlanta, Georgia.

Miss Edith Van Syckle,
Courthouse, Dover, Del.

Miss Curtis,
Lincoln School,
46 Park Ave., New York City.

Prof. Clyde Bowman,
Stout Institute,
Menominee, Wisconsin.

W.I. Mayox,
Plymouth, Mass.

E.J. Burke,
Hadley, Mass.

H.S. Bridges,
Ashfield, Mass.

Frank Sangster,
Scarborough School,
Scarborough, N.Y.

Miss Bertha Bentley,
Principal of Social Motive School,
New York City.

Miss Mabel Green,
Des Moines Public School,
Des Moines, Ia.

Miss Frances Dearborn,
Primary School, Detroit Normal School,
Detroit, Michigan.

F.L. Crowe,
New Richland, Minn.

Paul Calrow,
Fairmont, Minn.

K.A. Norsen,
Alexandria, Minn.

E.M. Gillig,
Sauk Centre, Minn.

V.A. Edwards,
Pipestone, Minn.

Geo. Girrbach,
Hector, Minn.

Miss Helen Field,
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Oak Lane, Philadelphia, Pa.

Miss Florence Bamberger,
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Emporia, Kansas.

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Cass Technical High School,
Detroit, Mich.

R.E. Spriggs,
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L.M. Roehl,
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C.E. Neff,
Martinsville, Mo.

Fred S. Russell,
Kirksville, Mo.

J.A. Wisdom,
Chillicothe, Mo.

M.G. Drum,
Cape Girardeau, Mo.

Agricultural Instructors:

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State College, Pa.

L.D. Nemmell,
Greenspring, O.

R.W. Wells,
West LaFayette, O.

O.J. Price,
Ravenna, O.

W.F. Bruce,
New Vienna, O.

A.C. Kennedy,
Medina, O.

EXHIBIT D

SUGGESTED SCORE CARD
for
JUDGING THE SUCCESS OR FAILURE
OF HOME PROJECTS

PRELIMINARY

<u>PLAN</u>		<u>Weight</u>	
I.	Plan of project.	:	:
	Definite plan of project before any work is done.	:	:
1.	Definiteness of project.	:	:
	Definite aim or purpose in executing the project, such as economic gain, establishing a truth or both.	:	:
2.	Pupil's initiative in planning.	:	:
	Initiative in planning. Extent to which the plan is original with the pupil.	:	:
3.	Completeness of plan.	:	:
	Enumeration of details.	:	:
4.	Extent to which execution of project follows plan.	:	:
		:	:
		:	:
		:	:
<u>EXECUTION</u>			
		:	:
		:	:
		:	:
II.	Efficiency of pupil in performance.	:	:
1.	Managerial skill.	:	:
	Degree of ability in executing the project as a whole in managing his own efforts in the most economic fashion.	:	:
2.	Application of scientific principles.	:	:
3.	Judgment.	:	:
	Common sense in applying the principles referred to above.	:	:
4.	Skill in performance of processes.	:	:
	The skill with which the pupil performs the processes involved in his project.	:	:
		:	:
III.	Records.	:	:
1.	Neatness.	:	:

	Orderly arrangement of facts.	:	:
	Cleanliness.	:	:
2.	Accuracy.	:	:
	Accuracy of detail in statement.	:	:
	Correctness of calculation.	:	:
3.	Completeness.	:	:
	Amount of detail. Minute	:	:
	factors involved in accounts.	:	:
	Detailed accounts of obser-	:	:
	vation from experience.	:	:
4.	Written story of project.	:	:
	Record in story form of the	:	:
	work which has been done.	:	:
	Definite conclusions drawn	:	:
	showing the educational	:	:
	value of the project.	:	:
5.	Note on reference reading.	:	:
	A diary or notebook showing	:	:
	notes on the references	:	:
	the pupil has read.	:	:
IV.	Mode of performance.	:	:
1.	Punctuality.	:	:
	Punctuality in handing in	:	:
	reports and in carrying	:	:
	out the processes of the	:	:
	project.	:	:
2.	Regularity.	:	:
	Regularity in performance of	:	:
	duties involved in the	:	:
	project.	:	:
3.	System in performance.	:	:
4.	Exactness.	:	:
	Exactness in keeping accounts	:	:
	and in the performance of	:	:
	each process, as weighing	:	:
	feed, weighing milk and	:	:
	other products.	:	:
V.	Time.	:	:
	Total number of hours spent in completing:	:	:
	the project including time spent	:	:
	in preparation of the plan, and	:	:
	in writing records.	:	:
		:	:
	<u>OUTCOMES</u>	:	:
		:	:
		:	:
		:	:
		:	:
VI.	Economic income.	:	:
	Amount of net income from the project.	:	:
	Profit due to the efforts of the	:	:
	pupil.	:	:
1.	Total income.	:	:
	Total amount of monetary return	:	:
	from the project.	:	:
2.	Percent profit.	:	:
	Percent of profit based upon the	:	:
	total investment.	:	:

VIII. Knowledge.

1. No knowledge of subject matter.

Such actual knowledge of the subject matter as the pupil gains thru the performance of the processes.

2. Former knowledge strengthened by application.

Knowledge which is firmly fixed by the performance of the processes under the natural setting.

3. Knowledge of social implication.

The knowledge which will aid the pupil to adjust himself in the social group. Such knowledge as may lead to a larger group consciousness or co-operation with fellow pupils.

4. Knowledge of related subject matter.

Knowledge gained from reading, from the class-room or from experiences which relate to the particular subject involved in the project.

Such knowledge as is gained thru the activities occasioned by the project.

IX. Initiative.

1. Problems suggested by the pupil.

Problems and questions brought to the attention of the class and of the teacher by the pupil.
Problems suggested by daily experience, but not answered in the text.

2. Suggested improvements in procedure.

Any suggestions which will improve the plan originally outlined.

Suggestions for improving apparatus or systems of keeping accounts, and lessening the physical effort necessary.

X. Attitudes.

1. Interest in work. Growth of interest.

Inherent interest in the project.
Interest shown at the beginning.

Growth of interest during the time the project is being carried on.

Interest at the close of the

- | | | | |
|----|----------------------------------|---|---|
| | project compared with | : | : |
| | interest at the beginning. | : | : |
| 2. | Desire to continue work. | : | : |
| | A desire to continue the project | : | : |
| | further or to engage in | : | : |
| | activities involving larger | : | : |
| | fields of work. | : | : |
| 3. | Evidences of co-operation. | : | : |
| | Evidences of co-operation with | : | : |
| | the fellow-pupils, with the | : | : |
| | teacher and with parents. | : | : |
| 4. | Interest in scientific methods. | : | : |
| | The interest shown in the appli- | : | : |
| | cation of scientific meth- | : | : |
| | ods. | : | : |
| | Interest shown in seeing results | : | : |
| | of scientific experiments. | : | : |

Criticism.

Summary.

- | | | | |
|-----|---------------------------------|---|---|
| 1. | Plan | : | : |
| 2. | Efficiency of pupil in perform- | : | : |
| | ance. | : | : |
| 3. | Records. | : | : |
| 4. | Mode of performance. | : | : |
| 5. | Time. | : | : |
| 6. | Economic income. | : | : |
| 7. | Skills developed. | : | : |
| 8. | Knowledge. | : | : |
| 9. | Initiative. | : | : |
| 10. | Attitudes. | : | : |

EXHIBIT E

Urbana, December 1, 1919.

Mr. R.O. Sussman,
Reading High School,
Reading, Pa.

My dear Mr. Sussman:

I have your name as one of a number of teachers who are interested in the project method of teaching. I am interested in devising a score card or standard to be used as a guide in judging the success or failure of the home project.

I am thinking of the project as a type of purposeful activity carried to completion in a natural setting. I am interested particularly in the agricultural project used in teaching vocational agriculture. Such a project might include all the processes involved in the growing of five acres of corn, from the selection of the seed in the fall to the marketing of the final product a year later.

I appreciate the fact that many of these captions will not fit the more elementary types of the project. I should like your frank criticism of the score card from your own point of view. Won't you be good enough to give me the benefit of your experience by criticizing these pages and returning them to me.

Very truly yours,

Carl Colvin

Associate in Agricultural Education.

CC:P

EXHIBIT F

DIRECTIONS.

Regard the subcaptions under each main captions as a group.

Criticize the main captions in the same way the subcaptions were criticized.

Weight each main caption with reference to the others on the basis of ten points for each caption.

Criticize the subcaptions, striking out those which seem to you to be non-essential and adding such as seem to you to be pertinent.

Evaluate each subcaption with reference to other subcaptions in its group on the basis of ten points for each subcaption.

Kindly return the copy in the enclosed envelope.

N.B. - Be sure to state the type of project that you have in mind in criticizing the score card.

EXHIBIT G

UNIVERSITY OF ILLINOIS
URBANA, ILLINOIS

DEPT. OF AGR. EDUCATION

March 17, 1920

The enclosed score card has been arranged in its present form after a preliminary card had been criticised by many experts. It is proposed as a guide in both directing and evaluating home project work in agriculture. It is not intended to be applied at the close of the project as the score card would be applied to a sample of corn, but it is rather intended to be used as a guide in teaching and supervising as well as a device to aid in measuring the quality of home project work.

By the term "project", I mean any purposeful home activity which involves enough complexity to make it a real problem, for example the growing of five acres of corn and all the processes involved from selecting the seed to marketing the product.

Won't you be good enough to rank the captions weighting them according to the directions printed on the enclosed sheet, offer any criticisms which seem to you to be pertinent and return the sheet to me. I shall be glad to mail you a copy of the final results.

Thanking you for your cooperation, I am,

Very truly yours,

CARL COLVIN,
Associate in Agricultural Education

CC/P

DIRECTIONS AND QUESTIONS REGARDING WEIGHTING OF PROJECT SCORE CARD

1. Note that this score card is to be used as a device in measuring the *quality* of the student's home work, rather than the worth of the project itself.
2. Rank the main captions A, B, C, D, E, F, and G, giving the first rank, (1), to the caption which in your opinion deserves the most emphasis; second rank, (2), to the one of next importance, etc. Indicate the ranks by arabic figures placed in the column headed, "rank."
3. Weight each of the seven main captions by distributing 100 points among them. Indicate the weight of each caption by arabic figures placed in the column headed "score."
4. Consider the sub-captions such as "initiative," "aim," etc., only as descriptive aids or definitions. Do not rank or weight them.
5. If you are teaching vocational agriculture, what is the approximate yearly profit from home projects per pupil in your class?

Answer.....

6. Do you consider it advisable to indicate a minimum net profit or home project work?
If so what should it be?

Answer.....

7. Any criticisms will be appreciated.

SUGGESTED SCORE CARD FOR JUDGING THE SUCCESS OR FAILURE OF HOME PROJECTS

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SCORE	RANK	
		<i>Preliminary</i>
		A. Plan.
		1. Initiative (Originality shown by the pupil in planning the project.)
		2. Aim (Such aims as economic gain, knowledge, credit, etc.)
		3. Completeness (Foresight of pupil indicated by details of plan.)
		<i>Excution</i>
		B. Records.
		1. Completeness (Records of time spent, amount of reference reading, conclusions drawn, cost items, and profits.)
		2. Neatness
		3. Accuracy (Correct calculations, accuracy of detail.)
		C. Efficiency in performance.
		1. Judgment (Common sense in application and development of scientific principles.)
		2. System. (Managerial skill in executing project as a whole.)
		3. Punctuality (Promptness in performance of processes, reporting, etc.)
		<i>Outcomes</i>
		D. Economic income.
		1. Total net income
		2. Percentage of profit (Based on total investment.)
		E. Skills.
		1. Skills developed (Number of different skills developed in the performance of the project.)
		2. Facility in performance (Degree of skill developed in the processes involved.)
		F. Knowledge.
		1. New subject matter (Factual knowledge gained through the performance of processes.)
		2. Social implications (Knowledge which will aid the pupil in adjusting himself in the social group. Development of larger group consciousness.)
		3. Related knowledge (Facts of related value gained from reading, classroom and experience.)
		G. Attitudes.
		1. Interest in work (Inherent interest, growth of interest, and desire to continue work.)
		2. Evidences of cooperation (Desire to cooperate with teachers, parents and fellow pupils.)
		3. Interest in science (Development and application of principles.)

Name..... Address.....

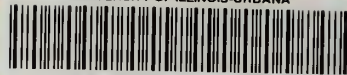
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